

REMARKS

At the time of the Office Action dated March 27, 2003, claims 1-18, 20-43 and 46-49 were pending and rejected in this application. Claims 1, 24, 40 and 42 have been amended, and claims 16-23 have been cancelled. Care has been exercised to avoid the introduction of new matter. Specifically, claims 1, 24, 40 and 42 have been amended to include the concepts that the material having an absorption edge only in a wavelength region other than 0.45 nm through 0.7 nm is disposed at an outermost surface of the X-ray mirror and that the light having at least a component in wavelength ranging from 0.45 nm through 0.7 nm is provided by setting an oblique angle of the X-ray with respect to the X-ray mirror to be not more than 1.5°. These concepts find adequate descriptive support throughout the originally-filed disclosure, for example, on page 53, lines 19-24 and page 63, lines 25-29. Applicants submit that the present Amendment does not generate any new matter issue.

Claims 1-2, 4, 14-15, 24-25, 27, and 37-39 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi, JP 11-014800, in view of Bearden et al. (hereinafter Bearden)

In the third enumerated paragraph of the Office Action, the Examiner admitted that Itabashi does not specifically teach using a material having an absorption edge only in a wavelength region other than 0.4 nm through 0.7 nm. The Examiner then referred to paragraph [0011] of Itabashi as teaching the use of "ruthenium in another embodiment." The Examiner

also asserted that Bearden establishes that ruthenium has an absorption edge only in a wavelength region other than 0.4 nm through 0.7 nm.

Applicants respectfully submit that the Examiner has misinterpreted the teachings of Itabashi. Specifically, paragraph [0011] of Itabashi does not suggest that ruthenium can be used "in another embodiment." Instead, paragraph [0011] only compares the reflectivity of heavier elements, such as Pt, W, Ta, U, Pd, and Ru with lighter elements, such as C, Si, and Al, and states that the reflectivity of heavier elements is greater than the reflectivity of light elements. Itabashi, however, does not specifically teach using all of the elements listed by Itabashi, including ruthenium, as a reflective surface. Instead, Itabashi only teaches the use of Pt and SiC to form a x-ray mirror. Therefore, in contrast to the assertions made by the Examiner, Itabashi does not suggest the use of ruthenium.

Applicants also note that the Examiner referred to paragraph [0012] of Itabashi as teaching that the mirror provides light having a component and peak in wavelength ranging from 0.45 nm through 0.7 nm. Paragraph [0012] refers to the four graphs in Figs. 2a, 2b and 3a, 3b of Itabashi and only states that these four graphs were obtained by testing the mirror formed from Pt and SiC using four different wavelengths λ : 0.6 nm, 0.7 nm, 0.8 nm, and 0.9 nm. Therefore, although Itabashi indicates that in X-ray lithography, an x-ray having a wavelength of 0.6 nm to 0.9 nm is used, Itabashi fails to define the X-ray's peaked wavelength. As previously discussed in the Amendment filed November 25, 2002, and supported by the references discussed therein, conventional X-ray lithography utilizes an X-ray with a spectrum designed to have a peaked wavelength in a range greater than 0.7 nm. Thus, even if a reference discloses an X-ray that

includes a wavelength, for example, of 0.6 nm, this disclosure does not necessary meet the claimed limitation of a peaked wavelength in a range from 0.45 nm to 0.7 nm.

Independent claims 1 and 24 have also been amended to further distinguish the claimed invention over the applied prior art. Specifically, claims 1 and 24 have been amended to include the concepts that: (a) the material having an absorption edge only in a wavelength region other than 0.45 nm through 0.7 nm is disposed at an outermost surface of the X-ray mirror and (b) the light at least having a component in wavelength ranging from 0.45 nm through 0.7 nm is provided by setting an oblique angle of the X-ray with respect to the X-ray mirror to be not more than 1.5°. These features are neither taught nor suggested by the applied prior art. Therefore, Applicants respectfully submit that one having ordinary skill in the art would not have arrived at the claimed invention based upon the combination of Itabashi and Bearden. Thus, Applicants respectfully request withdrawal of the imposed rejection of claims 1-2, 4, 14-15, 24-25, 27 and 37-39 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Bearden.

Claims 3 and 26 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Uzawa et al., U.S. Patent No. 5,524,131 (hereinafter Uzawa)

In the eighth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Uzawa disclose the invention as claimed. This rejection is respectfully traversed.

Claims 3 and 26 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Uzawa does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 3 and 26 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Uzawa is not viable and, hence, solicit withdrawal thereof.

Claims 5, 7, 28 and 30 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Oshino, U.S. Patent No. 5,677,939

In the ninth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Oshino disclose the invention as claimed. This rejection is respectfully traversed.

Claims 5, 7, 28 and 30 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Oshino does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 5, 7, 28 and 30 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Oshino is not viable and, hence, solicit withdrawal thereof.

Claims 6, 8, 29 and 31 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Sumiya, JP 3-120714

In the tenth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Sumiya disclose the invention as claimed. This rejection is respectfully traversed.

Claims 6, 8, 29 and 31 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Sumiya does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 6, 8, 29 and 31 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Sumiya is not viable and, hence, solicit withdrawal thereof.

Claims 9-10 and 32-33 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Haisma et al., U.S. Patent No. 5,622,525 (hereinafter Haisma)

In the eleventh enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Haisma disclose the invention as claimed. This rejection is respectfully traversed.

Claims 9-10 and 32-33 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1

and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Haisma does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 9-10 and 32-33 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Haisma is not viable and, hence, solicit withdrawal thereof.

**Claims 13, 36 and 40-43 are rejected under 35 U.S.C. § 103 for obviousness
predicated upon Itabashi in view of Bearden and Watanabe, JP 10-083955**

In the twelfth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Watanabe disclose the invention as claimed. This rejection is respectfully traversed.

Claims 13 and 36 respectively depend from claims 1 and 24, and independent claims 40 and 42 include similar limitations to those presented in claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Watanabe does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 13, 36 and 40-43 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Watanabe is not viable and, hence, solicit withdrawal thereof.

Claims 11-12 and 34-35 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Rostoker et al., U.S. Patent No. 5,375,974 (hereinafter Rostoker)

In the sixteenth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Rostoker disclose the invention as claimed. This rejection is respectfully traversed.

Claims 11-12 and 34-35 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Rostoker does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 11-12 and 34-35 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Rostoker is not viable and, hence, solicit withdrawal thereof.

Claims 16 and 17 are rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of JP 06-194497 (hereinafter Yanagihara)

As claims 16 and 17 have been cancelled, this rejection is moot.

Claim 18 is rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Yanagihara and further in view of Uzawa

As claim 18 has been cancelled, this rejection is moot.

Claim 20 is rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Yanagihara and further in view of Oshino

As claim 20 has been cancelled, this rejection is moot.

Claim 21 is rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Yanagihara and further in view of Sumiya

As claim 21 has been cancelled, this rejection is moot.

Claims 22 and 23 are rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Haisma

As claims 22 and 23 have been cancelled, this rejection is moot.

Claims 46-49 are rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Bearden, and further in view of Hasegawa, et al., U.S. Patent No. 6,219,400 (hereinafter Hasegawa)

In the twenty-fourth enumerated paragraph of the statement of the rejection, the Examiner asserted that the combination of Itabashi, Bearden and Hasegawa disclose the invention as claimed. This rejection is respectfully traversed.

Claims 46-47 and 48-49 respectively depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Hasegawa does not overcome the asserted deficiencies of Itabashi

and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 46-49 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Hasegawa is not viable and, hence, solicit withdrawal thereof.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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